UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/431,366	11/01/1999	DAVID BAGGETT	09765/018001	8583

26161 7590 11/29/2005

FISH & RICHARDSON PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
PHAM, KHANH B	
ART UNIT	**PAPER NUMBER**
2166	

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/431,366	BAGGETT ET AL.	
	Examiner	Art Unit	
	Khanh B. Pham	2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 5-21, 23-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mehovic (US 6,122,642 A) and in view of Filepp et al. (US 2003/0167307 A1), hereinafter referred to as Mehovic and Filepp.

As per claims 1, 5, 19, 23 and 30, Mehovic substantially teaches the claimed invention including an airline computerize reservation system ("CRS") to provide flight and seat availability information (Col. 2 lines 5-20), Mehovic also teaches at Fig. 4 a cache (Fig. 4, element 20) stores data propagated from the CRS 12 data, which is used to response to queries from client 26 (Col. 3 lines 54-58).

The different between Mehovic's system and the claimed invention is that Mehovic uses different cache management algorithm. Mehovic synchronizes the cache 20 with the CRS by propagating data immediately after CRS 12 updates the data or at definable intervals of time (Col. 3 lines 59-65), and therefore does not teach proactively update the cache based on frequency of access to the cache as claimed. However, Filepp teaches an airline reservation system (page 4, [0052]) utilizing caches storage (Fig. 2, 302) wherein the objects in caches are proactively updated based on frequency of access to the objects in the caches (page 50, [0821]-[0823]). Thus, it would have

been obvious to one of ordinary skill in the art at the time of the invention was made to combine Filepp's cache management algorithm with Mehovic's CRS system so that "only the latest version of the object will be provided to guarantee currency of information to the user" as noted by Filepp at page 50, [0821]. By factoring the frequency of updating of updating of the objects in order to determine whether cached objects are current, Mehovic's system would detect the fights with high frequency of access, which implies that the number of available seats are also changed more frequently, and update the flight data so that the availability information for that flight is updated and current, therefore prevent overbooking or assigning the same seat to multiple passengers.

As per claim 2, Mehovic and Filepp teach the method of claim 1 as discussed above. Filepp also teaches: "monitoring availability queries made to the cache by a travel planning system to determine which flights, sets of flights, the flights for a certain day, date, or market have a high demand for availability information" at pages 50-51, [0821]-[0827].

As per claim 3, Mehovic and Filepp teach the method of claim 1 as discussed above. Mehovic also teaches: "scheduling a list of keys where the list of keys are identifiers of specific instances of transportation to update or add, and for each key on the list in the order given, submitting a query to the availability source; and storing the result in the cache, by updating an entry if present and adding an entry if not present in the cache." at Col. 6 line 40 to Col. 7 line 15.

As per claim 6, Mehovic and Filepp teach the system of claim 5 as discussed above. Filepp also teaches the cache manager determines when an entry should be added to the cache at [0826].

As per claim 7, Mehovic and Filepp teach the system of claim 5 as discussed above. Filepp also teaches the cache manager determines when an entry should be deleted from the cache at [0827].

As per claim 8, Mehovic and Filepp teach the system of claim 5 as discussed above. Filepp also teaches the cache manager determines when an entry already in the cache should be modified at [0821].

As per claim 9, Mehovic and Filepp teach the system of claim 5 as discussed above. Mehovic also teach entries to be added, modified, or delete are obtained by asynchronous notification from external systems at Col. 3 lines 60-65.

As per claim 10, Mehovic and Filepp teach the system of claim 9 as discussed above. Filepp also teach entries to be added, modified, or delete are taken from a list or multiple list at [0830].

As per claim 11, Mehovic and Filepp teach the system of claim 10 as discussed above. Filepp also teaches the entries in the list include predetermined orderings or priority at [0830].

As per claim 12, Mehovic and Filepp teach the system of claim 10 as discussed above. Filepp also teaches entries to be added, modified, or delete are determined from a distribution or nature of availability queries poses to the cache at [0826]-[0827].

As per claim 13, Mehovic and Filepp teach the system of claim 10 as discussed above. Filepp also teaches entries to be added, modified, or deleted are determined by using a predictor or model of the availability queries which are likely to be posed or are likely to be useful in the future at [0826]-[0830].

As per claim 14, Mehovic and Filepp teach the system of claim 13 as discussed above. Filepp also teaches the predictor or model is based on a deterministic, probabilistic, or statistical classifier or predictor, databases or cache of historical data or previously predicted information, simulations of various availability systems and actually availability data sources" at [0826]-[0830].

As per claim 15, Mehovic and Filepp teach the system of claim 10 as discussed above. Filepp also teaches entries to be added, modified, or deleted are determined by comparing actual answer or cached answers to predictions made by a predictor or model of the availability information at [0826]-[0830].

As per claim 16, Mehovic and Filepp teach the system of claim 13 as discussed above. Filepp also teach the predictor used to guide the cache manager operation predicts the rate of change or time of change at [0826]-[0830].

As per claim 17, Mehovic and Filepp teach the system of claim 10 as discussed above. Filepp also teaches entries to be added, modified, or deleted are determined by prior knowledge at [0826]-[0830].

As per claim 18, Mehovic and Filepp teach the system of claim 10 as discussed above. Filepp also teaches entries to be modified or deleted are determined by the data of travel or the seat in comparison to the current date at [0826]-[0830].

Independent claims 20-21, 24-29, 30-32 recite similar limitations as discussed above. Claims 20-21, 24-29 and 30-32 are also rejected by the same reasons.

3. **Claims 4, 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mehovic and Filepp as applied to claims above, and further in view of Khosravi-Sichani (US 5,983,217 A), hereinafter "Khosravi".

As per claims 4, 22, Mehovic and Filepp teach the method of claims 1, 19 as discussed above. Mehovic and Filepp do not teach the step of processing query entry using round-robin algorithm as claimed. However, querying using round-robin is well know in the art, as exemplary by Khosravi. Khosravi teaches a method of querying replicate database using round-robin algorithm in order to "provide an even loadsharing of queries" (Col. 1 lines 55-65). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Khosravi with Mehovic and Filepp's teaching because employing round-robin algorithm would ensure that all queries are processed equally and providing an even loadsharing of queries.

Response to Arguments

4. Applicant's arguments filed September 12, 2005 have been fully considered but they are not persuasive. The examiner respectfully traverses applicant's arguments.

Applicant argued that "Mehovic does not teach any of the features of claim 1". Particularly, Mehovic does not teach "provid[ing] flight and seat availability information". The examiner respectfully disagreed. Mehovic teaches a method for migrating data

from the SABRE computerized reservation system to a relational database management system (i.e, a cache) for retrieval and used by the end user. The SABRE system is well known in the art and has been used by travel agents since 1960s to retrieve flight information, seat availability and booking information. All basic features of the SABRE system should be inherent to a skill in the art and need not be explicitly recited. Therefore, it is unreasonable to state that the SABRE system does not provide flight and seat availability information, as argued by applicants. Mehovic teaches the detail of information stored in the relational database, which includes: Reservation, Segment, Passenger and ticket at Col. 6 lines 40-67 et seq.

In response to Applicants' argument that Mehovic does not specifically deal with caching, the examiner respectfully submits that Mehovic teaches the method for migrating data from the SABRE system (Fig. 4, element 12) to a relational database (Fig. 4, element 20). The client 26 uses the data from the relational database 20 to retrieved propagated data from the SABRE system 12 (See Col. 3 lines 54-58). The relational database 20 is therefore acts as a cache to provide data to client 26.

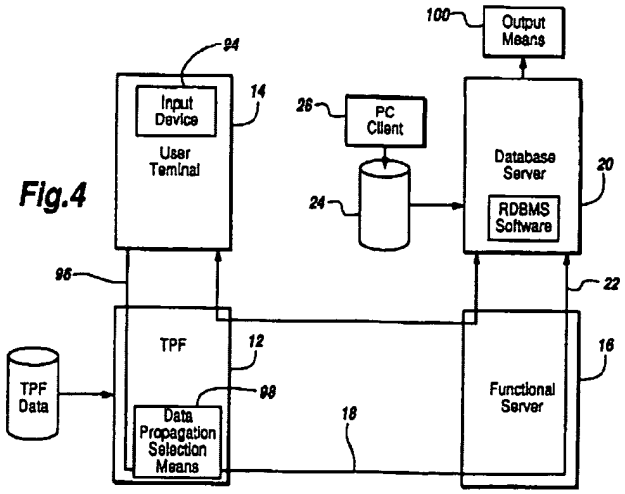

Fig.4

In response to applicants' argument that "Mehovic does not proactively determine if the cache are stale", the examiner respectfully submit that Mehovic teaches at Col. 3 lines 60-65 the steps for data propagation from the SABRE system to the relational database (i.e., updating the data in relational database 24 using the data from the SABRE system 12), wherein the propagation occur immediately after the system 12 updates the data, or at definable intervals of time. It is apparent that after the data in the SABRE system is updated, the data stored in the relational database 24 is stale. Mehovic therefore monitors the data in the SABRE system 12 to determine if the cache is stale. As soon as the data in the SABRE system 12 is updated, the updated data is propagated to the relational database in order to keep the cache current, or in sync with the SABRE system (Col. 3 lines 59-65). Mehovic's cache update method is "proactively" because the data in the cache is updated before it is used to provide information to the client 26.

Applicant argued that Mehovic does not determine staleness based on needs of travel planning system that makes queries to the cache, nor sending an availability query to a source of seat availability information based on determining that the answer was stale. The examiner respectfully submits that Mehovic determines the staleness based on needs of travel planning system (i.e., client 26) that makes queries to the caches (i.e., database 20). When the data in the SABRE system 12 is updated, the data in the database 20 is stale; Mehovic teaches the step of sending request form client 26 to the SABRE system 12 instead of the database 20, in order to retrieve and propagate

the updated data to the database 20 if the data in the cache 20 is stale (Col. 3 line 60 to Col. 4 line 26)

Applicant argued that claim 1 requires that the criterion for updating the seat availability information is based on the needs of the travel planning system that make queries to the cache, not frequency of access to the objects in the caches", but does not explain what the criterion is and how they are different. The claim 1 requires "criterion determined based on needs of a travel planning system that make query to the cache", therefore, if the needs of a travel planning system are current and updated information, then Mehovic anticipates this limitation because Mehovic teach the step of propagating updated data to the cache 20 in order to provide current and updated information to the client 26 which make query to the cache. Claim 2 further defines the step of determining, which comprises monitoring queries made to the cache to determine which flight have a high demand for availability information. The examiner interprets this limitation as monitoring frequency of accessing to the object in cache, because the flight has high demand implies that the data about that flight is accessed more frequent.

Claim 1 is therefore directed to a method for updating data in caches based on the frequency of accessing to the object in caches. An ordinary skill in the art would recognize that if an object in cache in accessed more frequent, the data contained in the object will expired faster and therefore it would requires update from the data source for updated data. For example, if the data for a particular flight is accessed more frequently, the number of available seats are also changed more frequently, therefore updating the flight data from the data source is needed so that the availability information for that

flight is updated and current, in order to prevent overbooking or assigning the same seat to multiple passengers. The Filepp reference is relied on by the examiner to show this fact.

Applicant argued that Filepp does not teach: "wherein the object in caches are proactively updated based on frequency of access to the objects in the caches". On the contrary, Filepp teches at [0821] that "when objects are requested from object storage facility 439, only the latest version of the object will be provided to guarantee currency of information to the user". This means that the objects in cache 439 are proactively updated, so that in only contains the latest version of the object, before receiving request for the objects. Filepp also teaches at [0823] that "The frequency with which the currency of objects is checked depends on factors such as the frequency of updating of the objects", which means that the frequency of updating object in caches is based on the frequency of updating the object as claimed.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Mehovic teaches a system to provide seat availability information for flights using data stored in a cache 20. Filepp teaches a method for updating object stored in a caches based on the frequency of access to the objects in the caches. When Mehovic and Filepp are combined, the objects in Filepp's caches should be interpreted as data related to seat availability information as taught by Mehovic. Therefore it is

unreasonable to state that Filepp teaches updating objects in caches to keep them current based on the frequency of access to the objects, but does not teach updating the seat availability information based on needs of a travel planning system that makes queries to the caches as argued by applicants, because the rejections are based on combinations of Mehovic and Filepp references.

Similar arguments are also applied to applicants' arguments regarding claims 5, 19, 2, 30.

Regarding claims 4, 22, applicants argued that Khosravi teaches a technique for load balancing not a technique for determining if the stored answer is stale. The examiner respectfully submits that the Khosravi reference was relied on by the examiner only to show that using round-robin algorithm for processing queries is well known in the art. Mehovic and Filepp do not teach the step of processing query entry using round-robin algorithm as claimed. Khosravi teaches a method of querying replicate database using round-robin algorithm in order to "provide an even loadsharing of queries" (Col. 1 lines 55-65). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Khosravi with Mehovic and Filepp's teaching because employing round-robin algorithm would ensure that all queries are processed equally and providing an even loadsharing of queries.

In light of the foregoing arguments, the 35 U.S.C 103 rejection is hereby sustained.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Pham whose telephone number is (571) 272-4116. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Khanh B. Pham
Examiner
Art Unit 2166

November 23, 2005

Khanh Pham